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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/700,872	11/04/2003	Kabi P. Padhi	03-SIN-094	6611

30425 7590 11/12/2010

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EXAMINER	
MONIKANG, GEORGE C	

ART UNIT	PAPER NUMBER
2614	

NOTIFICATION DATE	DELIVERY MODE
11/12/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/700,872	PADHI ET AL.	
	Examiner	Art Unit	
	GEORGE MONIKANG	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 August 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 7-10, 16-18 & 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pawate, US Patent 5719344, in view of Pawate2 et al, US Patent 5641927.

i. Re Claim 1 Pawate discloses an apparatus, comprising: a cross-correlator operable to receive a first audio signal and a second audio signals the cross-correlator also operable to cross correlate the first and second audio signals to produce a cross-correlated signal (*fig. 2: 33; col. 2, lines 39-55: similarity measure 33 compares two audio frames to figure out how much they match*); at least one parameter identifier operable to identify a plurality of parameters associated with at least one of the first and second audio signals using the cross-correlated signal (*fig. 2: 33; col. 2, lines 39-55: similarity measure 33 compares two audio frames to figure out how much they match*); and a score generator operable to receive the plurality of parameters and generate an indicator identifying an extent to which the and second audio signals match (*fig. 2: 37; abstract*). Pawate fails to disclose where the cross correlator correlates a first time period of the first audio signal with a second time period of the second audio signal, where the second time period is larger than the first time period. Pawate2 et al discloses

a karaoke system where two signals are synchronized using a synchronization overlap add (SOLA), such that the signals are aligned with the background music where if a user of the karaoke system is off pitch or sings a frame that does not match the background music in timing and length, an appropriate compensation is made to realign the users voice with the background music (*Pawate2 et al, col. 4, lines 31-61*). It would have been obvious to modify the Pawate karaoke system with the ability to synchronize as taught in Pawate2 et al's karaoke system such that the signals in Pawate will be synchronized before being measured for similarities, hence making the system much more efficient. Though the Pawate and Pawate2 et al references fail to disclose the parameter identifier being different from and the cross correlator, it would have been the designer's preference to make the similarity measure of Pawate in two separate devices such that the first device correlates the multiple signals and the second device measures how much similarity is between the two signals for the purpose of making the system dynamic.

Re Claim 7, the combined teachings of Pawate and Pawate2 et al disclose the apparatus of Claim 1, further comprising a voice activity detector operable to detect a voice in the input signal; wherein the score generator is operable to generate the indicator after the voice activity detector detects the voice in the input signal (*Pawate, col. 1, lines 28-34*).

Claims 8-10 have been analyzed and rejected according to claim 1.

Claim 16 has been analyzed and rejected according to claim 7.

Claims 17-18 have been analyzed and rejected according to claim 1.

Claim 24 has been analyzed and rejected according to claim 7.

Claim 25 has been analyzed and rejected according to claim 1.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 2-6, 11-15 & 19-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pawate, US Patent 5719344 and Pawate2 et al, US Patent 5641927, as applied to claim 1 above, in view of Bae, US Patent 5565639.

Re Claim 2, the combined teachings of Pawate and Pawate2 et al disclose the apparatus of Claim 1, wherein the at least one parameter identifier comprises: a correlation identifier operable to identify an amount of correlation between the first and second audio signals (*fig. 2: 33; col. 2, lines 39-55: similarity measure 33 compares two audio frames to figure out how much they match*); and a pitch variation identifier

operable to identify a variation in pitch between the first and second audio signals (*col. 3, line 55 through col. 4, line 4*) but fails to explicitly disclose a delay identifier operable to identify a delay between the first and second audio signals. However, Bae discloses a karaoke machine that compensates for the delay (*Bae, col. 4, lines 47-51*) between a first signal (*Bae, fig. 1: 5*) and a second signal (*Bae, fig. 1: 55*). It would have been obvious to modify the Pawate and Pawate2 et al system with a delay identifier as taught in Bae for the purpose of compensating for the delay of the two signals inputted into the karaoke machine when generating the scores.

Claim 3 has been analyzed and rejected according to claim 2.

Re Claim 4, the combined teachings of Pawate, Pawate2 et al and Bae disclose the apparatus of Claim 2, wherein the score generator is operable to generate the indicator by: generating a first score using the delay between the first and second audio signals and the amount of correlation between the first and second audio signals (*Bae, col. 4, lines 47-51: delay is taken into account when obtaining the score*); generating a second score using the variation in pitch between the first and second audio signals; and combining the first and second scores to produce a final score (*Pawate, col. 3, line 55 through col. 4, line 4*).

Re Claim 5, the combined teachings of Pawate and Pawate2 et al disclose the apparatus of claim 1, but fails to disclose wherein the first audio signal is associated with an input signal and the second audio signal is associated with a reference signal (Bae, fig. 1; col. 2, line 59 through col. 2, line 57 through col. 3, line 8); and further comprising: a plurality of decimators operable to receive and decimate the input signal

and the reference signal (Bae, fig. 1: 9 & 45; col. 2, line 59 through col. 2, line 57 through col. 3, line 8); and a plurality of filters operable to filter at least one of the input signal, the reference signal (Bae, fig. 1: 8 & 50; col. 2, line 59 through col. 2, line 57 through col. 3, line 8), a decimated input signal, and a decimated reference signal (Bae, fig. 1; col. 2, line 59 through col. 2, line 57 through col. 3, line 8) as taught in Bae. It would have been obvious to modify the Pawate and Pawate2 et al system with a plurality of filters and decimators as taught in Bae for the purpose of varying the passband.

Re Claim 6, the combined teachings of Pawate, Pawate2 et al and Bae disclose the apparatus of claim 5, wherein the plurality of filters comprise a second of the decimators operable to decimate the filtered reference signal (Bae, fig. 1; col. 2, line 59 through col. 2, line 57 through col. 3, line 8); a first band pass filter operable to filter the decimated input signal to produce the first audio signal (Bae, fig. 1: 8 & 50; col. 2, line 59 through col. 2, line 57 through col. 3, line 8); and a second band pass filter operable to filter the decimated reference signal to produce the second audio signal (Bae, fig. 1: 8 & 50; col. 2, line 59 through col. 2, line 57 through col. 3, line 8); but fails to explicitly disclose a first anti aliasing low pass filter operable to filter the input signal, a first of the decimators operable to decimate the filtered input signal; a second anti-aliasing low pass filter operable to filter the reference signal. However, Bae discloses a digital filter that is able to remove high and low frequency components (*Bae, col. 2, lines 46-58*). It would have been obvious to utilize multiple low pass filters to cut out the high frequency components for the purpose of passing certain frequencies.

Claims 11-12 have been analyzed and rejected according to claim 2.

Claim 13 has been analyzed and rejected according to claim 4.

Claim 14 has been analyzed and rejected according to claim 5.

Claim 15 has been analyzed and rejected according to claim 6.

Claims 19-20 have been analyzed and rejected according to claim 2.

Claim 21 has been analyzed and rejected according to claim 4.

Claim 22 has been analyzed and rejected according to claim 5.

Claim 23 has been analyzed and rejected according to claim 6.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GEORGE MONIKANG whose telephone number is (571)270-1190. The examiner can normally be reached on 9:00-5:00 EST Monday-Friday, Alt Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian C. Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/GEORGE MONIKANG/ 11/5/2010
Examiner, Art Unit 2614

/VIVIAN CHIN/
Supervisory Patent Examiner, Art Unit 2614